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November 18, 2016

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VIA ELECTRONIC DELIVERY

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Telephone Number Portability, *et al.*
WC Docket No. 07-149, WC Docket 09-109, CC Docket No. 95-116

Dear Secretary Dortch:

Neustar, by its attorneys, respectfully submits the attached *Number Portability Administration Center Transition Status Report* prepared by the IT transition experts supporting Neustar's Transition Project Management Office (TPMO). Also included are appendices prepared by the TPMO in connection with the transition.

Please contact me directly with any questions.

Sincerely,

Marc S. Martin
Counsel for Neustar

Attachments

Number Portability Administration Center Transition Status Report

Prepared By: Michael Krieger, Priscilla Guthrie, Roger Loeb
November 18, 2016

I. Executive Summary

In working with Neustar, Inc. and other key stakeholders in the Number Portability Administration Center (NPAC) transition during the past sixteen months, we have become increasingly concerned with the failure of the North American Portability Management LLC (NAPM) and the Transition Oversight Manager (TOM) to share transition governance, risk, and schedule information. The failure to share this information has the potential to significantly delay project completion. Although the requisite transition planning documents may exist, they have not, to date, been shared with Neustar.[1] Without such communication and transparency, this project does not appear to be on a path to meet even the high-level milestones provided by the NAPM and the TOM in the most recent timeline.[2] This concern is compounded by the failure of the NAPM's monthly transition reports to the FCC to provide a comprehensive and balanced assessment of the transition's status.[3] Without significant changes to the current transition process, it is reasonable to conclude that the transition will not be completed until sometime in 2019.

- ***Governance***
  - Transition roles and responsibilities have not been defined and shared. Doing so is fundamental to a successful transition program, particularly one that has a large user base and an industry-wide history of openness and broad participation.
  - Transition management processes have not been documented and shared, increasing the friction and number of interactions required at every step.

- ***Risk***
  - Risk mitigation plans have not been shared with stakeholders impacted by the transition. Certainly, Neustar, as the current operator, would have a role in such a plan, e.g., in supporting a rollback function should the transition go awry. The U.S.

[1] We understand that negotiations regarding an NDA among the parties continue. However, Neustar previously has received transition-related confidential information from the parties pursuant to the confidentiality requirements included in the contract between Neustar and the NAPM.

[2] North American Portability Management, LLC Transition Oversight Manager – TOEP Webcast, Aug. 31, 2016, https://www.napmllc.org/Docs/npac/ref_docs/REP_20160831_TOM_TOEP%20Webcast%20Content_v.2.01.pdf

[3] *See e.g.*, Letter from Todd D. Daubert, Counsel to the NAPM LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, Telephone Number Portability, *et al*., CC Docket No. 95-116; WC Docket Nos. 09-109 and 07-149 (dated September 30, 2016; released October 19, 2016). *See also* Letter from Todd D. Daubert, Counsel to the NAPM LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, Telephone Number Portability, *et al*., CC Docket No. 95-116; WC Docket Nos. 09-109 and 07-149 (October 31, 2016). According to the NAPM, "[t]his Report updates the FCC, the public, and all interested stakeholders regarding transition activities to date in accordance with the requirements of the LNPA Selection Order and guidance received from the FCC on Wednesday, June 24, 2015." *See id.* at 1. Neustar detailed specific concerns to the TOM regarding the NAPM's monthly status reports in a letter on May 20, 2016. *See* Letter from Michael E. Krieger, Neustar TPMO, to Greg Chiasson, PricewaterhouseCoopers (May 20, 2016).

government has identified continuously engaging stakeholders as a critical success factor.[4] Doing so on a program that involves a key national capability is essential.
    - Discussions related to risk mitigation, including rollback, have been minimal, resulting in a plan based on expectation of success rather than the prudent look at risk mitigation appropriate for an effort that has the potential to adversely affect citizens and law enforcement.

- ***Schedule***
    - There has been slightly more than a day-for-day slip in the advertised end date over the course of one year, from August 2015 to August 2016.
    - Over the course of the same year, while the build timeline increased slightly, timelines for other activities were shortened, giving the appearance of a time-based, rather than a conditions-based schedule. This is typical of troubled programs.
    - Lack of visibility into the schedule and knowledge of the requirements, e.g., the requirements that Neustar will be expected to support, is impacting Neustar's ability to plan which, if not addressed in time, is likely to adversely impact the transition schedule.

While Neustar has nearly two decades of experience operating the NPAC, it does not have experience with large IT transitions. Because of the potential for severe impact on NPAC users[5] due to a transition misstep, Neustar asked us to provide this status report based on our professional experience and the insights we have gained working on this project with key stakeholders. In it, we highlight concerns with the trajectory of the overall transition, with the hope that corrective actions can be taken, as deemed appropriate.

II. Transition Management is Not Based on Best Practice

The effort currently underway to transition from Neustar to iconectiv to serve as the next Local Number Portability Administrator (LNPA) is more than a transition; it is both the development of a new NPAC and an Information Technology (IT) transition. Clear governance, definition and assignment of roles and responsibilities, and transparency among, and involvement by, stakeholders are key project management tenets. Yet on this complex effort, involving many stakeholders, these important elements have not been shared with Neustar.

In an attempt to understand and assess the NAPM/TOM's approach to this effort, we looked to external sources, including the U.S. government, for additional insight to supplement out own experience with large IT acquisitions and transitions. In 2011, the U.S. Government Accountability Office (GAO) produced a report analyzing major IT acquisitions across the federal government.[6] The report identified nine critical success factors, five of which appeared

[4] *See* U.S. Government Accountability Office, Report to Congressional Committees, Information Technology, Critical Factors Underlying Successful Major Acquisitions, GAO 12-7 (October 2011).
[5] NPAC users include telecommunications carriers who rely on the system to support the routing of telephone calls and text messages, national security, law enforcement and public safety organizations for investigations and emergency calls, and consumers' switching between telephone carriers.
[6] U.S. Government Accountability Office, Report to Congressional Committees, Information Technology, Critical Factors Underlying Successful Major Acquisitions, GAO 12-7 (October 2011).

to be relevant to this effort.[7] Table 1 lists the relevant factors and our observations on the NAPM/TOM's approach and status for each.

Critical Success Factors	Approach/Status
Program officials were actively engaged with stakeholders	It is unclear at what level the transition leads (TOM and NAPM) intend to engage the Local Number Portability Administration Working Group, a North American Numbering Council subcommittee that is open to the public and to all LNP stakeholders, to get that group's input on the approach to certain critical aspects of the transition.
Program staff had the necessary knowledge and skills	NAPM representatives who lead this effort have experience with the NPAC, and the TOM has telecom experience; however, it is unclear how much IT transition experience exists within this team, and how much experience they collectively have with their approach.
Senior department and agency executives supported the programs	The FCC staff with oversight responsibility for this effort and the NAPM, which operates under the auspices of the NANC and the FCC, is strongly supportive of the program. However, there is no single executive responsible for making this happen. This is a critical shortcoming.
End users participated in testing of system functionality prior to formal end user acceptance testing	Based on discussions with key stakeholders, it is our understanding that prior "significant" releases of the current Neustar NPAC system included several months of structured user testing after performing the full regression test (more than 4,000 scenarios evaluating more than 90,000 test points). At this time, test plans, test schedules and acceptance tests for the new NPAC have not been shared, and it is unclear how or to what extent users/stakeholders will be involved, whether sufficient schedule time is allocated, and if there is a formal end user acceptance test planned.
Program staff prioritized requirements	While it is possible that requirements have been prioritized, this level of detail has not been shared, putting at least some users/stakeholders in a difficult position in planning for 2017.

Table 1. NPAC Approach/Status to Relevant GAO IT Acquisition Critical Success Factors

A. Roles and Responsibilities

In our experience, large, successful IT transition projects religiously define and document the assignment of roles and responsibilities.[8] Clearly defined and assigned roles and responsibilities are especially important in a situation where there is no shared and comprehensive contract among the parties, as is the case with the NPAC transition. The roles

[7] The other common critical success factors identified in the GAO Report are – "End users and stakeholders were involved in the development of requirements; Government and contractor staff were stable and consistent; Program officials maintained regular communication with the prime contractor; Programs received sufficient funding." *See id*.

[8] A Responsibility Assignment Matrix ("RAM"), also known as a RACI matrix, is an example of a tool used to clarify roles and responsibilities. RACI is an acronym derived from the four key responsibilities most typically used: *Responsible*, *Accountable*, *Consulted*, and *Informed*.

and responsibilities must align and be consistent with contractual obligations. They must be communicated, understood, and supported across the ecosystem. While the FCC Orders and the Master Service Agreements capture some of the high-level information regarding roles and responsibilities, there are no shared, clearly delineated, documented roles and responsibilities to guide the participants. In our collective experience, shared, clearly defined roles and responsibilities are key to maintaining progress and preventing ambiguities, disputes and delays. Without this basic information, Neustar is dependent on the NAPM/TOM for guidance at virtually every step in the transition process, and it leaves Neustar unable to do the basic planning to bring on any required staff and ensure they are appropriately trained. This is likely to impact the schedule.

B. Governance/Management Processes

There is an overall lack of "agreed-to" transition program management processes. For example, the lack of a shared, documented configuration management process with defined steps, addressing necessary comment, adjudication, and change management processes, has created confusion and unnecessary work. And, to date, the planning process, including the development of the schedule, milestones, and entry/exit criteria, has been opaque. Not only have the details of the plan not been shared, Neustar has minimal insight into the requirements that are expected of it. The documents provided to Neustar contain only a small set of the transition events and are incomplete with respect to milestones, dates, and detailed transition requirements – all of which are necessary both to develop required capabilities to meet Neustar's contractual obligations for the transition and for Neustar to adequately identify and allocate resources to support the transition. We first brought this issue to the NAPM's attention 10 months before it signed the contract with iconectiv.[9] Failure to engage users/stakeholders appropriately in the planning process will result in issues as the transition progresses.

C. Lack of Appropriate Engagement with Stakeholders

A key component to a successful transition is the engagement of, and collaboration among, all affected stakeholders. As noted above, the GAO identified the active engagement of stakeholders as a critical success factor. It is our experience that failure to engage stakeholders appropriately in the overall planning process is likely to result in significant downstream issues that ultimately impact both schedule and cost. Appendix B, prepared at our request by Neustar's Transition Program Management Office, describes the collaborative approach the numbering ecosystem (service providers, vendors, and regulators) has been successfully using since 2002 to handle changes to the NPAC. The current limited use of multi-stakeholder exchanges differs from both the collaborative approach used across the ecosystem for over a decade and from the active engagement of stakeholders noted by GAO as a critical success factor.

[9] On November 5, 2015, Neustar's TPMO sent a letter to the NAPM co-chairs offering several observations regarding the transition process and its implications and potentially unrealistic expectations on Neustar in connection with the transition. *See* Letter from Neustar to Marlene H. Dortch, Secretary, Federal Communications Commission, Telephone Number Portability, *et al*., Attachment, CC Docket No. 95-116; WC Docket Nos. 09-109 and 07-149 (November 12, 2015).

For example, an effective rollback process may require significant programming modifications, complex testing by all service providers, and certification that the process functions as expected, so that service providers have the capability, if necessary, to obtain accurate information that may have been lost as a result of whatever caused the decision to rollback. The lead time for modifications, testing, and certification could be substantial and would benefit from industry wide discussion of any rollback requirement.

III. Risk Mitigation Plans are Unclear

Any large project, particularly one that involves the nation's critical communications infrastructure, must have a risk mitigation plan where all the parties know their responsibilities in managing and mitigating risks. To date, Neustar has not seen a risk mitigation plan for this effort. While it is the NAPM's transition, clearly Neustar, as the current NPAC operator, would be expected to have a role in risk mitigation, e.g., providing some sort of rollback capability in case the transition goes awry.

Certainly there are multiple approaches to mitigating cutover risk, e.g., various types of testing, including parallel testing, parallel operations, extended "soak" times for the first region,[10] and rollback. It is surprising that there is no shared understanding of the philosophy or approach. Neustar unsuccessfully attempted to engage NAPM/TOM/iconectiv on the topic in February 2016, believing it was important to address this prior to finalizing the iconectiv contract.[11] The lack of insight, and corresponding inability to plan to meet key risk mitigation requirements, at this point is disconcerting and, from a national security perspective, seems unacceptable.

IV. Current Transition Timeline Appears to be High Risk

The issues noted above regarding best practices and risk mitigation compound our overall concern with the current transition timeline. On August 31, 2016, the Transition Oversight Manager announced that the planned completion date was May 25, 2018.[12] Over the course of the prior year, the end date slipped just over a year, essentially a day-for-day slip. And, while the development timeline increased slightly, other timelines including testing were compressed, with interim end-dates appearing to be compressed against the overall end date.[13]

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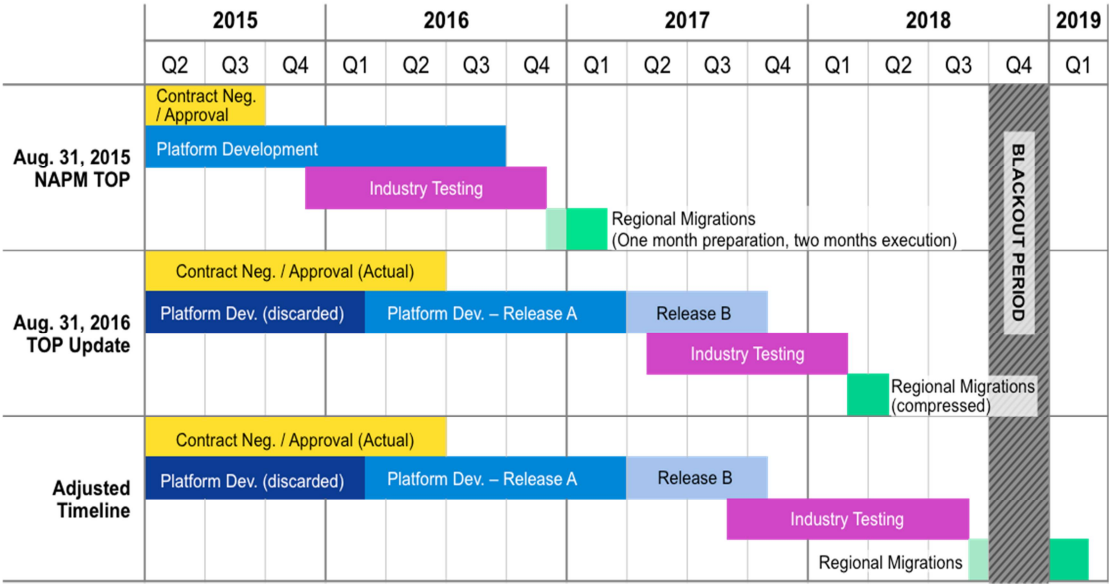
[10] The planned soak periods are relatively short, meaning that true operational availability and quality may be worse than the system's performance during testing. For example, a seven-day soak period is an inadequate amount of time to assess and address issues that will arise during the first migration and each subsequent regional migration. Best practices for an IT transition suggest a "soak" period that encompasses at least two "end-of-cycle" events (where a cycle might be a 30 day billing cycle) plus enough time for impacted stakeholders to recognize and surface their concerns. It is also important to recognize that many service providers have downstream systems that rely upon data from the NPAC to support various internal business processes. There must be adequate time for the owners of these systems to be assured of their correct operation.

[11] In February, Neustar provided a list of questions as the basis for a discussion, but the NAPM did not convene a meeting. In any case, finalizing an approach without engaging Neustar seems inconsistent with best practice and unlikely to work.

[12] North American Portability Management, LLC Transition Oversight Manager – TOEP Webcast, Aug. 31, 2016, https://www.napmllc.org/Docs/npac/ref_docs/REP_20160831_TOM_TOEP%20Webcast%20Content_v.2.01.pdf

[13] The most recent version of the schedule provides less time for testing than originally envisioned in the NAPM's August 31, 2015 Transition Oversight Plan (TOP). The testing period does not appear to leverage best practices,



While we have no basis for estimating the successor vendor's performance, we do have some experience with the performance of the overall ecosystem to date. We've seen: the day-for-day slip in the overall schedule, alignment discrepancies between the two key contracts, the lack of clear roles and responsibilities, the lack of dialog on risk mitigation, and the lack of insight into transition requirements against which Neustar will be required to perform. All of which leads us to believe that ecosystem performance will get worse rather than better as the issues become more complex, resulting in further delays.

For example, Neustar believes it will need to develop the capability to support rollback, as part of the overall risk mitigation plan. Yet, despite the fact that Neustar has been requesting discussion on this topic since February, the dialog is only just now getting underway. With the requirements still undetermined, assume Neustar needs 20 people to design and develop an effective rollback capability. Similarly, let's assume Neustar will need to increase help desk staff, perhaps by as many as 6 people, to support the transition. Again, as with rollback, requirements have yet to be finalized and schedule dates have not been shared. In both cases, Neustar is likely to need to bring on and train additional staff. Even if we assumed an average of 30 days to hire and 30 days to train, just these two examples could add 52 staff months and drive the schedule out 2 months, leaving very little time to recover on a NAPM/TOM timeline that allows only 19 months until the advertised completion date. If this happened with just one critical path item, the schedule could be lengthened by as much as 10%. And, at this point, Neustar has no insight into the specific transition requirements it will be counted on to deliver, the expected dates for those deliveries, or even what deliveries are on the critical path. As we near the end of 2016, we reiterate our concern that if requirements and schedules are not shared in a timely fashion with Neustar and also with other stakeholders who must perform functions on

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such as parallel or comparison testing between the new and the operational NPAC. Involvement of the service providers in testing is essential and will take time. And, there does not appear to be an industry-supervised user acceptance test.

critical path of the transition, staffing and training timelines alone are likely to adversely impact the transition schedule.

Additionally, when we look at even the high-level schedule, we note the slightly lengthened schedule for the big near term activity and the compressed timelines for activities that are further out, and we see the milestones bunched at the end. Again, these are typical indicators of a troubled program and, in aggregate, lead one to believe that the completion date is optimistic. If we simply took the original schedule and overlaid it on the current timeline, December 2018 appears to be a more likely completion date. And, if we factor in both the fact that the telecom industry does not typically complete new cutovers in the fourth quarter of any year because of peak consumer demand and the overall concerns with ecosystem performance, a 2019 completion date appears more likely. Certainly without some fairly significant changes, even 2019 might be optimistic.

APPENDIX A[1]

Neustar's Participation in the LNPA Transition

To assure stakeholders that Neustar has and will continue to do its part in this transition, we provide the following update on some of the key transition activities accomplished to date. In support of the transition, Neustar established a separate Transition Project Management Office (TPMO), supported by IT veterans, to focus exclusively on implementing the FCC's March 2015 Selection Order and to support an orderly transition.[2] Neustar's TPMO manages Neustar's response to the North American Portability Management LLC (NAPM) and the Transition Oversight Manager's (TOM) transition requests throughout this critical transition. Neustar separately continues to fulfill its responsibilities as the LNPA, and the TPMO allows the current NPAC operations team to continue its focus on providing high-quality service.

Neustar, through the TPMO, has participated in all transition joint vendor meetings (JVM) since they began in the summer of 2015 with full engagement on all appropriate transition planning matters,[3] and remains committed to attending these transition meetings going forward. Neustar's TPMO has responded to every request directed to us in the JVMs. Significantly, Neustar has provided timely data deliveries, in the manner requested, to iconectiv, the NAPM, and TOM. The following table outlines data deliverables by Neustar in support of the LNPA transition.

Data	Region(s)	Delivery Date
Customer Contact Data (EBDD)	All	February 2016, March 2016, April 2016, May 2016, June 2016, July 2016, August 2016, September 2016, October 2016
NPAC / SMS (EBDD)	Southeast	June 2016
LEAP (EBDD)	All	June 2016
NPAC / SMS – Test Platform (EBDD)	Midwest	June 2016
NPAC / SMS – Delta Files (EBDD)	Southeast	June 2016
NPAC / SMS (EBDD)	Midwest	July 2016
NPAC / SMS (EBDD)	Mid-Atlantic	July 2016
NPAC / SMS (EBDD)	Northeast	July 2016
NPAC / SMS (EBDD)	Southwest	July 2016
NPAC / SMS (EBDD)	West Coast	July 2016
NPAC / SMS (EBDD)	Western	July 2016

[1] Appendix A was prepared by Neustar's Transition Project Management Office.
[2] *See* Neustar Names Michael E Krieger to LNPA Transition Project Management Office, May 28, 2015, https://www.neustar.biz/about-us/news-room/press-releases/2015/neustar-names-michael-e-krieger-to-lnpa-transition-project-management-office.
[3] Neustar has participated in over 80 meetings with the TOM and NAPM representing more than 180 scheduled hours.

These deliverables required significant development efforts by Neustar. We took great care to ensure the data was an accurate reflection of the data in our operational database and that it met iconectiv's requirement. In fact, according to the TOM and NAPM, the deliverables were of a high quality. After delivering the data, Neustar was also available to answer clarification questions and to support follow-on requests from iconectiv, the TOM and NAPM related to the data delivery. There were more than 10 follow-on requests; Neustar addressed all of them to the NAPM and TOM's satisfaction.

Neustar's participation has not been limited to data delivery, as we have also delivered on more than 65 action items, as requested by the TOM and NAPM. The following table outlines an abbreviated list of the closed actions items.

Closed Actions – Neustar (Abbreviated List)
• **Bill the industry for the TOM under no-cost Statement of Work 98**
• **Provide iconectiv tutorials on LEAP,[4] WDNC,[5] Billing and Pooling**
• **Provide iconectiv access to secure portions of NPAC.com website**
• **Provide extensive details on timing associated with EBDD[6] data extracts**
• **Document Neustar roles and responsibilities in the transition**
• **Provide initial feedback on 8 parallel operations documents**
• **Support development of the iconectiv EBDD specification**
• **Analyze issues that need to change in the EBDD specification to support rollback**
• **Provide list of parent companies that receive aggregated bills**
• **Give iconectiv historical data on customer ticket volume**
• **Provide iconectiv Neustar's LEAP and WDNC methods and procedures**
• **Deliver a list of current scheduled services for each customer**
• **Participate in billing focus group to inform iconectiv billing approach**
• **Provide iconectiv copy of Regional User Agreement Form that could be replicated**
• **Automate the process of extracting customer data and provide data monthly**
• **Deliver emergency preparedness case studies to iconectiv**

Additionally, beginning in July 2015, iconectiv began asking Neustar questions relating to NPAC industry documentation (NPAC Functional Requirements, NPAC Interoperable

[4] Neustar's Local Number Portability Enhanced Analytical Platform (LEAP) gives law enforcement agencies information about recent telephone number porting activity. *See* https://leap.neustar.biz/.

[5] The NAPM authorized Neustar to provide Wireless Do Not Call that helps businesses avoid violations of the Telephone Consumer Protection Act (TCPA). This subscription service allows marketers to identify telephone numbers ported from wireline to wireless service providers, and vice-versa.

[6] EBDD refers to Enhanced Bulk Data Download, a prescribed data format for NPAC information used for the purposes of transition

Interface Specification, NPAC Error and Flow Document, NPAC XML Interface Specification, and the NPAC Turn-up Test Plan). In the 16 months since then, there have been 16 separate requests with a total of 225 questions, with many of these questions containing several sub-parts. Neustar diligently performed the research and answered all of the questions on a timely basis. Although some of these questions resulted in clarifications to industry documentation, and in a few cases, resulted in corrections to the industry documentation, many of these questions involved educating iconectiv on the NPAC industry documentation and information.

Appendix B[1]

Neustar's Experience with Prior NPAC System Changes

In order to better understand the NAPM and TOM's approach to the transition effort, Neustar reviewed the approach the numbering ecosystem (service providers, vendors, and regulators) previously has used to handle smaller changes to the NPAC since 2002. The same basic process has been used since 2002 to accomplish such changes. The key elements of this process are:

- A proposal is brought to the LNPA Working Group of the North American Numbering Council.

- Technical and operational implications, including the impacts on downstream systems, testing requirements, implementation milestones and schedules, etc. are developed in the LNPA Working Group's public forum, seeking and permitting input from all participants. (When necessary, subcommittees with voluntary participants and industry experts are formed to delve into necessary details without involving the entire group. Any decisions, however, are deferred to the Working Group itself. In addition formal reports from the subcommittees are regularly provided to the larger LNPA Working Group.)

- Decisions whether/how to proceed with a technical or operational change are made via consensus, in open forum. When necessary, documents are prepared to justify the selected path forward and to document minority positions and concerns.

- A request consisting of formal technical change order(s) is submitted to the NAPM who has responsibility for approving Administrator fees (when present). The NAPM can send change orders back to the Working Group for revision, when deemed necessary.

- If approved, planning and development begin. New requirements and associated test cases are added to industry documents, such as the FRS. The schedule is documented in a Statement of Work, which is then published and monitored by the LNPA Working Group.

- LNPA completes development along with all functional and regression testing before making the new code available for vendor certification and service provider testing. The platform vendors and service providers test against the exact same platform that is staged for production.

- Service provider testing is conducted after certification testing for vendors, when necessary. Any issues found with either the NPAC itself or subtending vendor systems are eligible to be the subject of discussion in the LNPA Working Group.

[1] Appendix B was prepared by Neustar's Transition Project Management Office.

- A single region is deployed into production, with sufficient "soak" time to ensure stability of the ecosystem. When ready, additional regions are deployed. In the event of failure, rollback procedures are available to restore previous states of production.

The current transition has not been following this well-established process. For example:

- The LNPA Working Group, has limited visibility into the specifics related to the transition. The majority of decisions have been made without its involvement, therefore absent the benefit of broad industry input and expertise.

- The schedule and requirements for the transition have been published without first ensuring that all the dependencies required to meet those requirements can be met.

- Issues discovered during testing, either with the new NPAC itself or with subtending systems, are being subjected to a strict non-disclosure policy, which is preventing open discussion between vendors and their customers to find the best resolutions and risk mitigations.